COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

MITT ROMNEY
Governor

KERRY HEALEY
Lieutenant Governor

STEPHEN R. PRITCHARD
Secretary

ROBERT W. GOLLEDGE, Jr.
Commissioner

REVISED DRAFT

ASBESTOS IN SOIL
STREAMLINING REGULATION AND MANAGEMENT

- **Summary of Approach**
- **Proposed Amendments to Regulations and Policies**
- **Technical Support Document**

Prepared by: Bureau of Waste Prevention
Bureau of Waste Site Cleanup

July 18, 2006

ASBESTOS IN SOIL
STREAMLINING REGULATION AND MANAGEMENT

REVISED DRAFT RECOMMENDATIONS

1. Introduction

This proposal addresses the assessment and cleanup of three types of situations in which asbestos has been released into soil: asbestos in (and around) building components (e.g., pipes and boilers) that have been buried in soil; asbestos in debris that has been disposed improperly in or on the ground; and unconsolidated asbestos fibers found in soil. It establishes an approach that protects public health and the environment from exposures to asbestos, coordinates the requirements of applicable state and federal programs, and provides certainty and flexibility to people who need to deal with asbestos in soil in the course of developing property and/or cleaning up releases.

In September 2004, MassDEP proposed a set of regulations and policies that would coordinate and streamline the various regulations that address the assessment, cleanup and disposal of asbestos that has been released into soil (including "urban fill" material), in a way that is consistent with the Department's approach to addressing other contaminants. MassDEP held public hearings on these proposals, and since the end of the comment period has been working with a stakeholder workgroup to revise the proposal in response to the comments received.

Comments generally affirmed the overall proposed approach that clarified the criteria for deciding which MassDEP program would oversee various types of asbestos releases. However, commenters also raised questions about three specific areas: 1) appropriate analytical methods to use for making decisions about notification, site assessment, and risk assessment/"how clean is clean enough"; and 2) available options for disposal or reuse of excavated soil. At the Workgroup's suggestion, MassDEP sampled and analyzed soil from several sources known to contain asbestos, and used the results to develop the new proposals in this package:

- A recommended analytical method for determining whether soil containing small pieces of material that contains asbestos needs to be reported to MassDEP, and how such soil can be managed if it needs to be shipped off-site;
- MCP notification criteria (Reportable Concentrations) for debris containing asbestos from building construction, building demolition, and manufacturing sources, and for such debris mixed in soil,
- An expanded exemption from the definition of "Special Waste" (in Solid Waste rules) for soil containing asbestos-containing material at concentrations less than the MCP's Reportable Concentration and unconsolidated asbestos fibers where no asbestos-containing source material is present; and
- A state-wide general approval for reuse of soil containing less than a maximum concentration of asbestos-containing material at active and closing landfills, as grading and shaping material and as alternative daily cover.

This package also contains proposals that are either unchanged from the first draft (although minor editing has been done to clarify some points) or that have been revised to address comments received in Fall 2004. These include:

- MCP notification exemptions for intact or relatively intact structures that contain asbestos (e.g., pipes, boilers, concrete panels, floor tiles) and unconsolidated asbestos fibers in soil that are handled as abatements in accordance with 310 CMR 7.00 and 7.15;
- Notification under 310 CMR 7.15 of the active management of asbestos containing material that is not conducted under the MCP;
- Best Management Practices (BMPs) for active management (including excavation and loading bulk quantities into containers for off-site disposal) of asbestos in soil (guidance) and
- MCP rules for managing waste generated by response actions to ensure that soil containing asbestos is managed and disposed of properly.

As with the 2004 proposal, this package would eliminate notification to the Department (BWP or BWSC) of unconsolidated asbestos fibers that are found in soil in the absence of material believed to be the fiber source (unless the fibers weigh more than one pound and were released in a period of 24 hours or less), and notification to BWP under 310 CMR 7.15 for the active management of asbestos containing material during response actions conducted under the MCP.

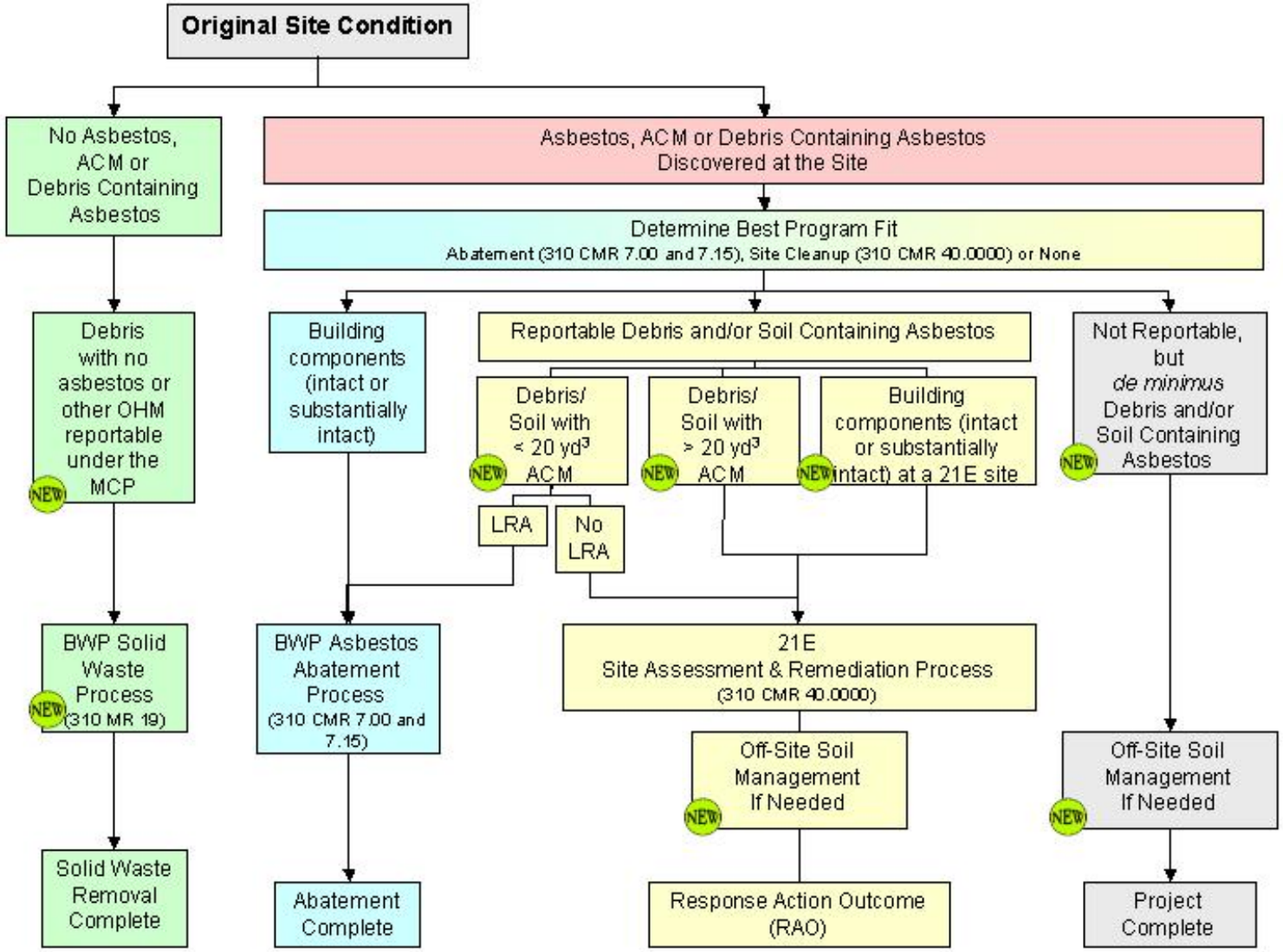
Figure 1 describes MassDEP's overall approach for notifying MassDEP of releases of asbestos in soil, assessing those releases, and cleaning them up where needed. Figure 1 also identifies the components of this approach for which new recommendations are being proposed. MassDEP is soliciting public comments specifically about these new proposals, in addition to accepting comments on the other regulations and policies in this package.

Please see the public hearing schedule and information about how to submit comments to MassDEP on p. X. MassDEP is also soliciting public comment on the proposed amendment of MassDEP Policy # COMM 97-001, Reuse and Disposal of Contaminated Soil at Massachusetts Landfills. The comment period for this policy will run concurrently with the comment period for the draft regulations; comments may be submitted on the regulations and policy together.

The rest of this package contains:

- Section 2: Recommendations for Notification, Case Management, Cleanup Decisions, and Off-Site Soil Management
- Section 3: Specific amendments to the Massachusetts Contingency Plan (310 CMR 40.0000, Part A), the Massachusetts Air Quality Regulations (310 CMR 7.00 and 7.15, Part B), and the Massachusetts Solid Waste Regulations (310 CMR 19.000, Part C)
- Section 4: Technical Support: MassDEP Sampling and Analysis Project for Soil Containing Asbestos

Figure 1 - Conceptual Process to Address Asbestos[1]-Contaminated Soil



[1] Including asbestos, Asbestos Containing Material ("ACM"), and asbestos or ACM mixed with Debris.

2. Proposals for Notification, Case Management, Cleanup Decisions, and Off-Site Soil Management

Asbestos is a contaminant encountered at many previously developed ("brownfields") sites. It is highly hazardous to human health when inhaled. Where there is no route of exposure (e.g., when it is buried at depth in soil or under another type of barrier), it presents no current risk to public health. Care needs to be taken to ensure that the asbestos will be properly managed when brought to the surface by disturbing its cover or by excavation.

Current Regulations: Two MassDEP programs currently regulate asbestos management to prevent releases of asbestos into the environment:

- Building renovations and demolitions involving asbestos are regulated by MassDEP's Bureau of Waste Prevention (BWP) under 310 CMR 7.00, under the terms of a delegation from the U.S. EPA (under the National Emission Standards for Hazardous Air Pollutants, or "NESHAP "). Anyone engaging in renovation or demolition work is required to survey the building for asbestos, and notify BWP at least 10 working days before work commences if asbestos is present. Most asbestos removal work must be performed by contractors holding an appropriate license from the MA Dept. of Labor and Workforce Development (Division of Occupational Safety, DOS).
- Wastes containing asbestos are regulated by BWP under the Solid Waste rules, 310 CMR 19.000 and must be disposed of as a "special waste" (310 CMR 19.061).

In addition, asbestos is a listed "hazardous material" that is regulated by MassDEP's Bureau of Waste Site Cleanup (BWSC) under the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000) when it is released into the environment.

There has been considerable confusion about which program rules apply when asbestos is found in soil. The proposed regulations and policies in this package identify the situations that must be reported to MassDEP and addressed in accordance with the MCP, and the situations that need to be addressed in accordance with the Air Quality Regulations (310 CMR 7.00 and 7.15). This package also clarifies and streamlines the rules that apply to off-site disposal of soil containing asbestos. Through these proposed changes, MassDEP expects to establish better awareness of the rules and "best management practices" in the development community, and to improve the agency's ability to allocate its resources to the situations that pose the greatest risk to public health.

These proposals have been developed to protect public health and the environment as past releases of asbestos are cleaned up. MassDEP believes them to be functionally equivalent to the protections provided by NESHAP.

Analytical Considerations: A key part of this proposal is the identification of an appropriate and cost-effective analytical method for notification, site assessment and soil management. The standard analytical methods for asbestos have been developed to quantify asbestos in air and in building materials – historically the two areas of regulatory concern for asbestos. These methods are less reliable when applied to a heterogeneous material like soil. While progress has been made to adapt these existing methods[2], there is currently no standard method for measuring the concentration of asbestos in soil.

[2] Methods designed for measuring asbestos in bulk material have been applied to the soil matrix, although laboratories only report asbestos as being "present" or "not present" in soil. Some laboratories using the EPA Region 1 Protocol will report asbestos as a percent in soil, if requested, even though the Region 1 Protocol states that the protocol is not meant to be used as a quantitative method.

To address these issues and to respond to comments submitted on the first set of proposals in Fall 2004, MassDEP, in cooperation with an external workgroup and the LSP Association, has developed a "Sieve Method" to quantify the concentration of asbestos source material in soil or debris. The method calls for a substantial sample (approximately 1 kg) to be screened at three screen sizes and the retained material examined to determine whether "asbestos containing material" ("ACM") is present. The amount of ACM (not asbestos) can then be quantified. The small (less than 3" in diameter) pieces of ACM represent potential sources of asbestos fibers to the environment. This method was tested using soil excavated by construction of the Central Artery/Third Harbor Tunnel projects in Boston, which contained a variety of types of ACM; the sampling and analytical procedures used and analytical results are described in Section 4 of this package. This method is proposed for MCP notification purposes and for the management of soil removed from a site. The presence of significant (greater than the proposed Reportable Concentrations) amounts of asbestos source material warrants the assessment of potential risks posed by the contamination at the site and the thoughtful disposal or reuse of the soil.

2.1 Proposal for Notification: What Situations Must be Reported to MassDEP, and Which Program Should be Notified

The 2004 proposal recommended tailoring MassDEP oversight to different types of situations where asbestos is found in soil, and proposed that any given release would be reported to only one program:

- Asbestos found in debris that could pose a significant risk if it is not assessed and cleaned up (if necessary) was proposed to be reported to BWSC and managed under the MCP.

- Asbestos found in and around building components buried at a site is considered to be hazardous only at the point when the building components are going to be excavated, handled, or otherwise "managed". These situations were proposed to be reported to BWP and handled as asbestos abatements under the Air Quality regulations (310 CMR 7.15). Notification under 310 CMR 7.15 would also be required for removing (or relocating) building components that are mostly intact and in their original trench or underground location, but that have been cut or broken, such as cement pipes that have been "burst in place" and pipes or boilers that are discovered when a backhoe breaks into them.

- The 2004 proposal also recommended that, where intact building components are found buried at sites that have already been reported under the MCP (due to the presence of asbestos or other reportable conditions) and where the components need to be removed or otherwise managed, that a separate notification under 310 CMR 7.15 would not be needed, but that the site's LSP would need to ensure that the asbestos is abated in compliance with the requirements of 310 CMR 7.15.

The Superfund Method for the Determination of Releasable Asbestos in Soils and Bulk Materials (US EPA 540-R-97-028, 1997, as modified in the document titled Modified Elutriator Method for the Determination of Asbestos in Soils and Bulk Material, May, 2000) is designed to measure the expected amount of asbestos released to the air in respirable dust from asbestos-contaminated soil. The results are measured in air (although they can also be reported in soil), relying upon standard and accepted protocols. Air measurements are directly applicable to the exposure pathway of concern (the inhalation route), and they may be used in combination with estimates of dust generation to quantify potential risk. MassDEP is currently using both this Method and activity-based air sampling to inform agency risk-based decisions at specific sites.

This approach is consistent with long-standing principles of both the MCP and the air quality rules. In general, the MCP requires notification of sites that are likely to pose a significant risk to public health, safety, welfare, or the environment if they remain unaddressed, and does not require MCP notification for sites where current and foreseeable conditions are not likely to pose a significant risk. Notification under 310 CMR 7.15 for removal/management of building components containing asbestos will ensure a) that the work does not create risk by releasing asbestos to the air, and b) that asbestos-containing waste material is managed appropriately.

The single notification to MassDEP for asbestos and asbestos-containing material that is being excavated, handled, or otherwise moved also serves to satisfy federal NESHAP and Massachusetts Division of Occupational Safety (DOS)[3] notification requirements. Under this proposal, some of the notifications that would otherwise be submitted to MassDEP/BWP would be submitted to MassDEP/BWSC concurrently with MCP plans. MassDEP will establish internal operating procedures (and may amend some established forms) to ensure that this single notification will continue to meet all state and federal reporting requirements.

The overall approach of the 2004 proposal was well-received. However, commenters requested that the MCP reporting thresholds be set in terms of soil analyses that could be conducted by a laboratory, and also requested that thresholds be established on the basis of real-world sampling data. Therefore, this package leaves the overall approach proposed in 2004 unchanged, and proposes a different set of thresholds for notification under the MCP. The new MCP notification proposals are described below and summarized in Figure 2. They deal with the timing and nature of notification, and are designed to ensure that the risks presented by asbestos found in soil in its most common forms are managed appropriately:

- **Notification requirements are proposed for the MCP consistent with its existing framework for sudden, time critical, and historic releases.**

    - Two new definitions would be established in the MCP:

      "Debris[4] Containing Asbestos in Friable Material", which would be defined as individual friable material(s) or pieces of friable material(s) that are 3 inches or larger in diameter and in which asbestos is present in concentrations equal to or greater than 1%. These materials would include friable materials that readily release asbestos fibers to the surrounding environment, such as insulating materials that contain asbestos, spray-on fireproofing, plaster, and ceiling tiles, as well as non-friable materials that have become broken or crushed and are now releasing asbestos fibers. The size threshold is intended to capture materials that can be identified through a visual inspection of Debris.

      "Debris Containing Asbestos Source Material" would be defined as individual materials or pieces of materials that are less than 3 inches in diameter and in which asbestos is present at concentrations equal to or greater than 1%. Debris Containing Asbestos Source Material would include friable material as well as material that was originally non-friable but which has become friable due to the actions of weathering, demolition or

[3] DOS uses the information to ensure that the asbestos contractors it licenses are performing in accordance with its rules.

[4] "Debris" is used in this proposal as already defined in the MCP (310 CMR 40.0006). To summarize, "Debris" means solid material that is a manufactured object, plant or animal matter that is intended for disposal or is otherwise no longer serving its intended use, including demolition and construction waste.

other forces. The forms of asbestos covered by this requirement are generally a subset of the federal definition of "Regulated Asbestos-Containing Material" ("RACM")[5], which includes roof tiles, shingles, pipe, roofing felts, caulking putties and stucco that have become friable or pulverized.

- The existing 2-hour reporting requirement for any sudden release of asbestos (such as during improper building demolition) that exceeds the Reportable Quantity of one pound (310 CMR 40.0311) would be retained. The one-pound criterion would be applied to the asbestos itself and not to the weight of the asbestos-containing material (ACM), which is the most common form in which asbestos is released into the environment. The RQ is intended to address sudden releases of asbestos, not ACM.

- A new 2-hour reporting requirement is proposed for Debris Containing Asbestos in Friable Material that is found on the soil surface within 500 feet of an occupied building, school, playground, recreational area or park[6]. The combination of high exposure potential and likelihood of airborne asbestos fibers released from material that is easily broken or crushed is a combination that *could* pose an Imminent Hazard, similar to existing requirements [310 CMR 40.0321(2)(b)] for other hazardous materials. This reporting threshold would also apply to Debris Containing Asbestos in Friable Materials that is uncovered (i.e., made surficial) during an excavation. For this type of notification, asbestos would need to comprise 1% or more of each individual material in which it is found (as opposed to 1% or more of all the Debris at the site).

  A 2-hour notification is appropriate because these conditions have the potential to pose the highest hazard to public health from asbestos in soil, where it is most likely to become airborne and reach receptors. As with any 2-hour notification under the MCP, an Immediate Response Action (IRA) would be conducted to identify and implement any action needed to prevent exposure to surficial asbestos (e.g., removal or cover).

- A new 120-day reporting requirement is proposed for Debris Containing Asbestos in Friable Material that is found either on the soil surface but more than 500 feet from receptors, or below the ground surface at any depth.

- A new 120-day reporting requirement is proposed for Debris Containing Asbestos Source Material found on the ground surface or below the surface at any depth.

- The proposed 120-day notification conditions would allow for the implementation of a Limited Removal Action (LRA) at sites with small quantities of asbestos-containing soils (20 yd^3) to eliminate the need for notification under the MCP.

- No MCP notification is proposed for asbestos if the site conditions do not otherwise pose an Imminent Hazard, and

[5] RACM ("Regulated Asbestos-Containing Material") is (a) friable asbestos material (e.g., thermal, fire-proofing or acoustic insulation), (b) Category I non-friable ACM (e.g., gaskets, resilient floor covering or asphalt roofing product) that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II non-friable ACM (cementious pipe, shingles, roof tiles, transite board) that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material…(EPA-340/1-90-018).

[6] Consistent with 310 CMR 40.0321, which establishes notification requirements for contamination near "sensitive receptors".

- asbestos is present at the site only in the form of unconsolidated fibers in soil (with no identifiable source); or

- the concentration of asbestos in individual friable or non-friable material(s) at the site is less than 1%, regardless of depth and location; or

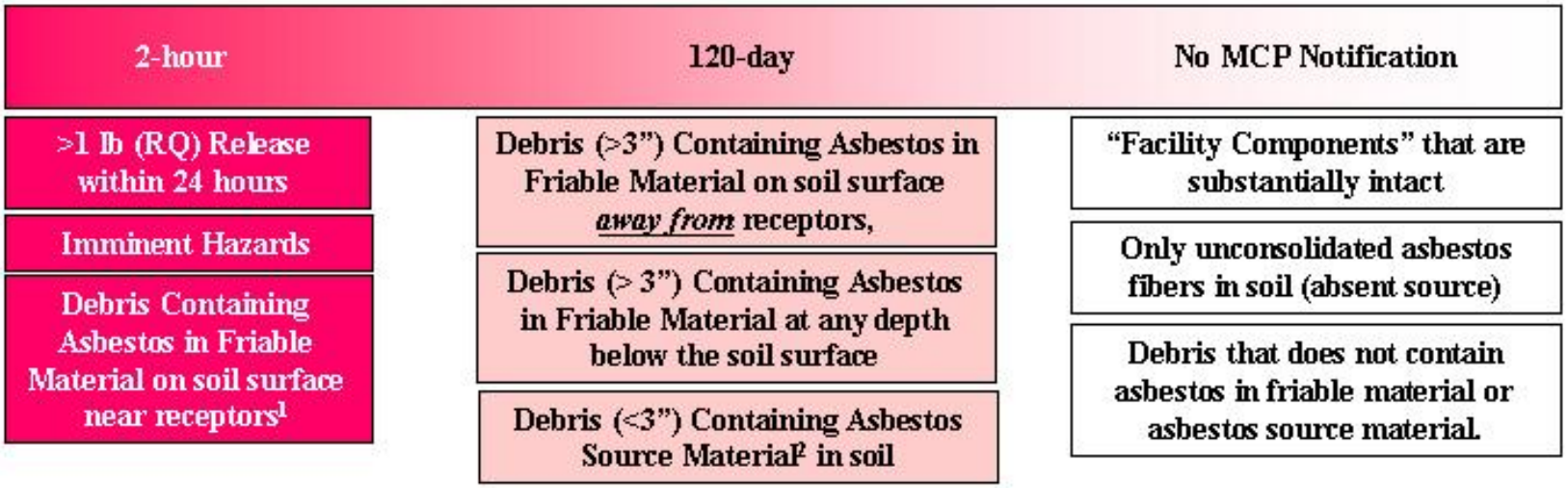
- asbestos is present only in Debris Containing Asbestos Sources at a concentration that is less than the Reportable Concentration (See Section 3, Part A);

- the asbestos is contained in intact (or substantially intact) buried building components or structures that are being abated under 310 CMR 7.15 or will remain undisturbed in their current location; or

- asbestos is present in Debris only in the form of intact (i.e., unbroken) non-friable materials.

Figure 2

Proposed MCP Notification Requirements Applicable to Asbestos



[1] Written similarly to 310 CMR 40.0321: on soil surface soil at any location within 500 feet of an occupied building, school, playground, recreational area or park.

2 A Subset of the USEPA term "RACM", including asbestos in material that was originally "non-friable" but which has been broken, crumbled, pulverized or reduced to small pieces less than 3" in diameter.

Please note that asbestos is frequently found mixed with debris from improperly managed building construction and demolition, and with wastes from old manufacturing processes (that were used as fill in the past). While MassDEP does not require notification of Debris that does not contain oil or hazardous materials (e.g., asbestos), such Debris needs to be managed appropriately (see Section 2, Case Management).

In general, asbestos in a truly nonfriable matrix is considered to pose less of a risk than friable asbestos. However, the Department recognizes that, with exposure to weather over time, nonfriable matrices can deteriorate and become friable, or decompose so that a mixture of unconfined asbestos fibers and debris is present in the environment. In practice, this proposal may bring much of the ACM found in the environment into the 21E system, because once it has been dumped in the environment, breakage during dumping and weathering over time starts to break up most ACM matrices, and fibers are released. U.S. EPA has established definitions and procedures (RACM) for determining if a material is of regulatory concern due to its current condition and the likelihood of its releasing fibers during abatement, regardless of the friability of the original source material. In order to clarify and standardize the MCP notification requirements, it is assumed that individual pieces less than 3 inches in diameter have been broken, crushed and pulverized sufficiently to release asbestos fibers from the original matrix, thus making the small pieces "friable". This assumption is consistent with the U.S. EPA RACM definition.

Please also note that the MCP requires notification decisions to be made based on current conditions at the site (in terms of potential for exposure). A site may not need to be reported based on current activities that are taking place there (e.g., asbestos-containing debris is present, but at a concentration between the RCS-1 and RCS-2 level in an area that is categorized as RCS-2). However, if site uses change so that people can be exposed to detected contamination, there may be a reporting obligation. Most owners who have specific plans for redeveloping their property consider the new activities and uses when they make their reporting decisions.

With the establishment of *de minimus* thresholds for MCP notifications, some situations would not need to be reported to MassDEP. However, please note that, when MassDEP learns of locations where construction and/or demolition debris has been improperly disposed of, the Department may take enforcement action for improperly disposing of these materials (under Solid Waste Regulations, 310 CMR 19.000) and/or failing to properly abate asbestos during demolition or renovation activities (under Air Quality Regulations, 310 CMR 7.00), as appropriate. These are discussed further in Section 2.2, Case Management.

The proposal to require neither MCP notification nor BWP notification for active management of unconsolidated asbestos fibers in soil unless there is an identifiable source material is based on a detailed review of the available analytical methods for asbestos in soil, which confirms that, at the present time, there is no standard analytical method available to reliably quantify asbestos fibers in a soil matrix. As noted above, the currently available approaches can determine whether asbestos fibers are "present" or "not present" in the sample. Notification criteria based on "present/not present" results would be very crude measures of the potential risk posed by the site. Currently, the standard analytical methods cannot reliably differentiate between source material that poses high or low risk in soil. Most asbestos sites that have come to MassDEP's attention include at least some debris containing asbestos that would otherwise trip one of the proposed notification requirements. However, data that is now available from the use of the U.S. EPA elutriator method at actual sites indicate that low levels of asbestos fibers in soil alone (without source debris) may pose low-to-moderate health risks, so that the existing notification requirement for Imminent Hazards is needed to address sites not otherwise captured by the proposed criteria.

Due to the limitations of standard analytical methods for quantifying asbestos levels in soil (as noted above), the recommended use of the "sieve method" to identify reportable Debris Containing Asbestos Sources is a proxy for identifying levels of fibers in soil that could pose a Significant Risk. However, once a notification has been made to MassDEP of asbestos in soil, a risk assessment will be needed to determine whether remediation is needed (see Section 2.3, Recommendations for Cleanup Determinations, below). This proposal allows soil containing unconsolidated fibers that exist in the absence of material that is likely to be the source of the fibers to be managed and disposed of without oversight by the Commonwealth, although MassDEP recommends that "best management practices" (see Section 3) be followed to prevent asbestos from becoming airborne during excavation and handling. As improved analytical methods are developed specifically for asbestos fibers in soil, MassDEP may revisit this issue.

Please note that, as with any other Oil or Hazardous Material regulated by the MCP, no Activity and Use Limitation is required to mark the presence of asbestos in soil that is not reportable under the MCP.

2.2. Proposals for Case Management

Site Characterization:

- The history of a site (with particular attention to the former presence of buildings and their renovation and demolition history) needs to be reviewed to identify the potential for encountering Debris containing asbestos.

- When Debris is encountered at a site, it needs to be evaluated to determine whether it includes asbestos-containing material.

- After Debris Containing Asbestos in Friable Material has been removed, or when the site history indicates that small pieces of asbestos-containing material (i.e., "Debris Containing Asbestos Source Material") may be present in soil, soil samples should be analyzed using the sieve method. To account for the variability of asbestos distribution in soil matrices, assessments should rely on an adequate number of samples, especially in relatively heterogeneous matrices (to meet data quality objectives), or rely upon methods that incorporate large volumes of soil per sample.

Abatement of buried structures containing asbestos structures under 310 CMR 7.15:

- This proposal would allow inactive pipes, boilers, ducts, etc. that contain asbestos or are wrapped in asbestos-containing material to be left in place at the discretion of the property owner. If they need to be moved (or removed) and are mostly intact, they must be abated with BWP notification and standard abatement techniques, as well as "Best Management Practices" for bulk soil handling where applicable (see Section 3, Part D below for draft guidelines). If the site has been reported to MassDEP under the MCP, this abatement should occur under the supervision of an LSP, who would ensure that the asbestos-containing material is managed according to established work practices, etc. required by 310 CMR 7.15. To complete an abatement project, all visible asbestos-containing material will need to be removed, along with an additional 6 inches of soil immediately surrounding the structure. No confirmatory soil samples will be required to complete the abatement, since removal of the additional 6 inches will be presumed to have removed most fibers emanating from the material.

- Where asbestos-containing structures are left in soil, MassDEP recommends that the property owner keep a record of the residual asbestos-containing material and its location, and provide this

information to the next property owner. No deed notice is required, due to the high costs and impracticality of creating surveyed plans of these components that would be required to meet the filing standards of Massachusetts Land Court and the Registries of Deeds.

Management of Debris containing ACM in soil:

- This proposal would require remediation of Debris Containing Asbestos in Friable Material (e.g., material found at sites where old building components have been improperly disposed or used for fill) triggering a 2-hour or 120-day MCP notification to be managed under the MCP. Such Debris found at a site at or below grade (uncovered through excavation) should be disposed of at a facility that is licensed or approved by MassDEP (or the state in which the disposal facility is located) to accept it. It must be disposed of as a "Special Waste", in accordance with the rules established for handling Asbestos Containing Waste Material (see 310 CMR 7.00 and 7.15). While this proposal allows Debris containing asbestos only in intact non-friable materials to remain unaddressed, these materials would need to be managed carefully if they are moved, to avoid breaking or crushing them.[7] Small quantities of ACM may be culled from the Debris (using work practices established in 310 CMR 7.15) and disposed of as "Special Waste", allowing the remainder of the Debris to be disposed of as Solid Waste if it is free of ACM. Where ACM cannot be separated from the Debris, all the Debris will need to be managed as Asbestos Containing Waste Material. Section 2.4 below discusses off-site management of soil containing asbestos in more detail.

- Whenever ACM is found to be present with Debris, the "sieve method" should be used to test for residual contamination in soil after the Debris has been removed, to determine whether reporting under the MCP is required (or, if the site has already been reported under the MCP, to decide whether additional response actions are needed). Management of asbestos-contaminated soil under the MCP will not require an additional notification under 310 CMR 7.15. BWP "Best Management Practices" will need to be implemented during excavation to avoid releasing asbestos into the air (See Section 3 below).

- LSPs will need to provide Waste Site Cleanup Opinions to ensure that assessments and remediation meet the MCP's requirements (see Sections 2.3 below). LSPs will need to rely on asbestos consultants and contractors licensed by the Division of Occupational Safety to the extent required by that agency.

- Small volumes of asbestos in Debris or soil triggering a 120-day MCP notification can be managed via the MCP's Limited Removal Action (LRA) provisions. Where only a 120-day reporting threshold is exceeded and the Debris/contaminated soil is less than 20 yd^3, an LRA may be conducted to remove the Debris. The goal of an LRA is to eliminate the reportable condition, and therefore the LRA must remove all visible Debris plus an additional 6 inches of soil immediately surrounding the Debris, or the site would need to be reported under the MCP (see below). Since LRAs are not required to be managed by an LSP, notification must be provided under 310 CMR 7.15 to ensure that the asbestos is managed properly

MassDEP Oversight

- BWSC staff would audit reports submitted under the MCP that concern asbestos contamination as they currently do for reports dealing with other contaminants.

[7] If non-friable ACM is broken or crushed, it would become friable, and the material would be subject to notification under the MCP.

- Abatements of building components reported under 310 CMR 7.15 would be overseen by BWP staff, as with abatements of asbestos in on-going renovation or demolition projects.

- MassDEP retains its existing authority to pursue enforcement actions for improper building demolition or renovation involving ACM that result in releases of asbestos into the environment (under 310 CMR 7.00), and for improper/illegal disposal of construction and demolition debris (under 310 CMR 19.000) that come to the agency's attention. In such situations, MassDEP generally expects the property owner to remove all visible debris (and manage it as Asbestos Containing Waste Material if it includes ACM), and to use the "sieve test" to determine whether residual contamination must be reported under the MCP. The application of specific cleanup standards at sites where illegal disposal of construction and demolition debris has occurred will be determined by MassDEP on a case-by-case basis, and may be the subject of future policy development under the Department's Enforcement Response Guidelines.

2.3. Proposals for Cleanup Decisions ("How Clean is Clean Enough?")

- A risk-based approach should be used to make "how clean is clean enough" decisions for sites involving asbestos in soil under the MCP Method 3 risk characterization rules. This approach includes the use of measures to eliminate potential exposure (such as a cap), as well as those that reduce environmental concentrations (such as removal and disposal).

- Debris Containing Asbestos in Friable Materials that are located in the top 3' of soil needs to be addressed so that it does not become a continuing source of asbestos fibers that can be released into the environment.

- Low levels of asbestos fibers at 21E sites would be allowed to remain in some soil matrices without a barrier and AUL where it can be demonstrated that the asbestos presents an insignificant exposure (and therefore an insignificant risk) because its disturbance would not release enough fibers into the air to cause a significant risk. A decision to leave such low levels of asbestos in soil without a barrier to exposure must be based on a demonstration that the risks are truly insignificant, based on one of the methods described in Figure 3.

- Risk-based cleanup decisions must consider current and potential future inhalation exposure to asbestos fibers (either incorporated into a material or in unconsolidated form) at or from the disposal site using appropriate methods to quantify the current and/or future concentration of asbestos in air. *The proposed "sieve method" to quantify the presence of source material for the purpose of notification should not be used for quantitative risk assessment.* DEP is considering the development of guidance for this demonstration, which would include several analytical options that could be used to support an LSP's Opinion that a condition of No Significant Risk has been achieved. These options would include the use of MassDEP's "dust generation" model, EPA's "Modified Elutriator Method for the Determination of Asbestos in Soils and Bulk Materials" (i.e., the "Superfund Method"), or performance of activity-based sampling. The demonstration should address both "on-site" and "off-site" receptors that could be affected by airborne asbestos, as well as any specific characteristics of the type(s) of asbestos containing Debris that has been found at the site. MassDEP solicits comment on issues that such guidance should address.

- At sites where concentrations of ACM in Debris or soil are less than the applicable Reportable Concentration, no notification will be required. However, as with other types of hazardous materials, remediation may still be necessary to eliminate a Significant Risk, pursuant to 310 CMR 40.0370. Such response actions would be conducted without the submittal requirements, approvals and fees of the MCP. Management of the contaminated soil would not be subject to any otherwise applicable BWP requirements, including ANF-001 notification (unless the asbestos is contained in a buried building component that needs to be abated).

Figure 3

Options for Demonstrating "No Significant Risk" (NSR) For Closure Under the MCP

Eliminate/Control all "continuing sources" (310 CMR 40.1003(5)), *and* Demonstrate one (or a combination) of the following conditions:

1. Achieve "non-detect" levels of asbestos in soil
   - No Debris Containing Asbestos Source Material
   - No asbestos fibers in soil using PLM with TEM confirmation
2. Achieve "background" levels of asbestos in soil
   - Site-specific background would have to be determined consistent with MCP
3. Eliminate exposure pathways
   - Examples: cover with paving, cap or building, *or* 3 ft of soil acceptable for unrestricted contact
4. Demonstrate NSR using a quantitative risk assessment
   - Superfund (Elutriator) Method to measure asbestos in respirable dust, combined with estimates/model of respirable dust concentration in air
     $RISK = [Asbestos]_{PM10} \times [PM_{10}]_{air} \times Inhalation\ Exposure \times Unit\ Risk_{asbestos}$
5. Demonstrate NSR using another site-specific approach
   - Activity-based monitoring to estimate current and future concentrations of asbestos in respirable dust

2.4. Proposals for Disposal of Excavated Soil Containing Asbestos: "Special Waste" Exemption and Reuse Options

To address concerns raised by stakeholders about the costs associated with disposing of soil containing low levels of asbestos fibers, MassDEP proposed in the 2004 draft regulation package to exempt soil containing only unconsolidated asbestos fibers from classification as a "Special Waste" under 310 CMR 19.000. In response to comments received on that proposal, MassDEP is proposing to expand this exemption to include soil contaminated with asbestos-containing material in concentrations that are less than the applicable Reportable Concentration, as well as unconsolidated asbestos fibers. These proposals are described in Figure 4.

In addition, MassDEP is also proposing to amend MassDEP Policy # COMM 97-001, Reuse and Disposal of Contaminated Soil at Massachusetts Landfills, to allow soil containing concentrations of asbestos-containing material that are lower than specific maximum limits to be used as shaping/grading material at in-state landfills, and, with a lower maximum contamination limit, as daily cover at these facilities. This proposal is based on analytic results from soil sampling that MassDEP conducted in 2006 (described in section 4 below). The proposed maximum contaminant levels for asbestos in soil have been developed to ensure that site workers and neighbors will not be exposed to a significant risk from asbestos fibers that are released into air during typical soil management activities at landfills (using the same risk assessment methods that formed the basis for other maximum contaminant levels allowed by this policy[8]).

Please note that the proposed changes in 310 CMR 19.061 and MassDEP Policy # 97-001 cannot guarantee that in-state landfills will accept this material. However, if the proposed revisions are incorporated into this Policy, Massachusetts landfills that want to accept this material for use as alternative daily cover or grading and shaping purposes would be able to do so under the terms of their existing operating permit, and would not need further MassDEP approval.

To ensure that people conducting response actions involving asbestos in soil under the MCP are aware of the regulatory requirements governing asbestos waste disposal, MassDEP has also revised 310 CMR 40.0032, "Contaminated Media and Contaminated Debris" to note the applicability of the Massachusetts Air Quality and Solid Waste regulations, and of the National Emission Standards for Hazardous Air Pollutants to disposal of soil containing asbestos.

[8] Calculation of the maximum contaminant level for asbestos in soil used for alternative daily cover used standard assumptions about landfill workers' potential exposure, and also assumed continuous exposure to residents at the landfill property line over seven years. The calculation of the maximum contaminant level for asbestos in soil used for grading and shaping material also used standard assumptions about landfill workers' potential exposure, and assumed continuous exposure to residents at the landfill property line over six months (since this material is typically placed on the landfill face and covered more quickly than daily cover material).

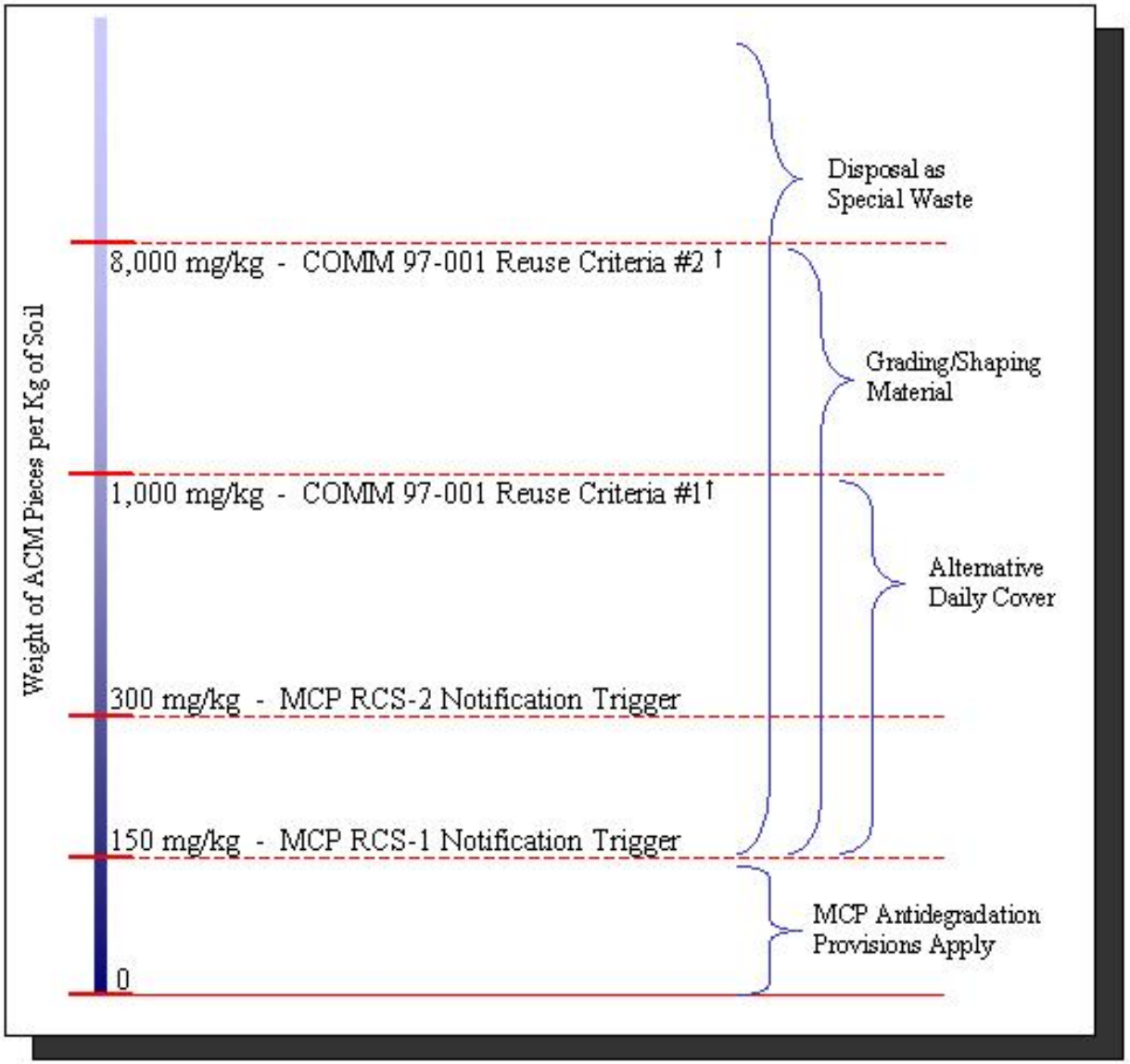
Figure 4

Disposal Options for Debris Containing Asbestos Source Material

Concentrations Resulting from Measuring the Weight of ACM (*Not Asbestos Fibers*) in Soil Using a Sieving Technique.

Example:

- Large, representative sample dried, weighed
- sieved using specified mesh
- identify, count & weigh ACM pieces on sieve
- ACM identified using standard bulk soil analyses (if necessary)



† See Section 3.4 – Proposed Amendment of MassDEP Policy # COMM 97-001, "Reuse and Disposal of Contaminated Soil at Massachusetts Landfills"

3. Proposed Amendments of MassDEP Regulations and Policies

Implementing the proposed approach will require amending three sets of MassDEP regulations, as well as an amendment of DEP Policy # COMM 97-001, and new guidance on "Best Management Practices" for handling asbestos-containing material during excavation and bulk loading, determining "how clean is clean enough", and sampling. These are presented in this section:

- Section 3.1 contains amendments of the MCP (310 CMR 40.0000, including a new proposal for establishing specific Reportable Concentrations at 310 CMR 40.0300);
- Section 3.2 contains amendments to the Air Quality Regulations (310 CMR 7.15, with minor edits made in the 2004 proposal);
- Section 3.3 contains amendments to the Solid Waste Regulations (310 CMR 19.000, including a proposal to expand the exemption for certain asbestos-contaminated soil from classification as "Special Waste at 310 CMR 19.000);
- Section 3.4 contains a proposed amendment of MassDEP Policy # COMM 97-001, Reuse and Disposal of Contaminated Soil at Massachusetts Landfills, adding asbestos in soil to Table 1 of that Policy; and
- Section 3.5 contains revised guidance for Best Management Practices for Bulk Loading of ACM Soil/Debris.

DEP invites public comment on the specific proposals for establishing numeric Reportable Concentrations and for amending the Solid Waste Regulations and MassDEP Policy # COMM 97-001. Once the Department has reviewed comments submitted and decides how to handle the issues raised, the agency will promulgate final rules.

3.1: Proposed Asbestos-Related Changes to the Massachusetts Contingency Plan

NOTE TO REVIEWERS: *The following changes are proposed to clarify the notification and cleanup requirements for asbestos fibers in soil and asbestos in Debris.*

This package contains new notification proposals that have been designed to address public comments about the 2004 regulatory proposals. MassDEP is also continuing to propose (as we did in 2004) to amend 310 40.0030, Management of Remediation Waste, to ensure that off-site management of soil containing asbestos meets all applicable state and federal requirements (this section is included again for context). A revised proposal for amending 310 CMR 40.1003, Response Action Outcomes, is also included in this package to establish that Debris Containing Asbestos in Friable Material in surficial soil is considered to be a source to ambient air. Also, please note that one MCP revision proposed in the 2004 package was promulgated on April 3, 2006 with other MCP amendments in a package known as "Wave 2". This amendment established that asbestos does <u>not</u> have an Upper Concentration Limit in Soil or Groundwater (40.0996).

Issue: The terms "friable" and "nonfriable" are used, in part, to determine notification requirements. Definitions are proposed that mirror the federal NESHAP definitions, modified slightly to reflect the differences between site assessment/remediation and abatement. Should the MCP define new descriptive terms to distinguish between material that has (or may) release asbestos fibers and material that is unlikely to release such fibers?

1. Definitions

A. Current – None specific to asbestos

B. Proposed

i. Debris Containing Asbestos Source Material
means Debris that includes any material that is less than 3 inches in diameter and contains 1 percent or more asbestos by area.

ii. Debris Containing Asbestos in Friable Material
means Debris that includes any material that is 3 inches or more in diameter and contains 1 percent or more asbestos by area that, (a) when dry, can be crumbled, pulverized or reduced to powder by hand pressure, or (b) has become crumbled, pulverized, or reduced to powder.

2. Exemptions

Current

i. 310 CMR 40.0006, Definition of "Disposal Site"
Disposal site means.... The term shall not include any site containing only oil or hazardous materials which: are building materials still serving their original intended use or emanating from such use...

ii. 310 CMR 40.0317(12), 120-day Notification Exemptions
releases of oil and/or hazardous material resulting or emanating from:...
(e) building materials that are in good repair and still serving their original intended use;

Proposed - 310 CMR 40.0317, 120-day Notification Exemptions

i. releases of asbestos from abandoned building components or structures, such as pipes, boilers or duct banks, that are intact or substantially intact. For the purposes of this section, "substantially intact" shall mean that the original structure remains recognizable, the Debris Containing Asbestos in Friable Material appears to have originated from the structure, and that such Debris has not been dispersed more than one foot from the structure.

ii. releases indicated solely by the presence of unconsolidated asbestos fibers in soil, provided that the source of the asbestos fibers is not known.

3. 2-Hour Notification Requirements

Current

i. Imminent Hazards - 310 CMR 40.0321(1)(d)
a release to the environment of oil and/or hazardous material which poses a significant risk to human health when present for even a short period of time, as specified in 310 CMR 40.0950;

ii. Sudden Releases – 310 CMR 40.0311
Asbestos Reportable Quantity = 1 pound

Proposed: Conditions Which Pose or Could Pose an Imminent Hazard – 310 CMR 40.0321

a release to the environment indicated by the presence of either 1 cubic foot or more, or 1 pound or more, of Debris Containing Asbestos in Friable Material (e.g., insulation, fire-proofing, plaster or ceiling tiles), at the ground surface at any location within 500 feet of an occupied building, playground, recreation area or park.

4. 120-Day Notification Requirements (310 CMR 40.0315)

A. Current – None for asbestos

B. Proposed:

1. Debris Containing Asbestos Source Material Not Posing an Imminent Hazard
A release to the environment indicated by the measurement of Debris Containing Asbestos Source Material in soil in an amount equal to or greater than the applicable Reportable Concentration described in 310 CMR 40.0360 through 40.0369 and listed at 40.1600, where the total contiguous volume of the asbestos-contaminated soil or debris is equal to or greater than two cubic yards;

2. Reportable Concentrations for Debris Containing Asbestos Source Material
a. RCS-1 = 150 mg/kg
b. RCS-2 = 300 mg/kg

3. Debris Containing Asbestos in Friable Material Not Posing an Imminent Hazard
Except as provided in 310 CMR 40.0317 and 40.0321, a release to the environment indicated by the presence of either 1 cubic foot or more, or 1 pound or more, of Debris containing Asbestos in Friable Material.

5. Management of Remediation Waste, 310 CMR 40.0030

310 CMR 40.0030 et. seq. establishes requirements that have been designed to ensure that contaminated media containing Oil and Hazardous Materials that could be regulated as "hazardous wastes" pursuant to MGL c. 21C and 310 CMR 30.000 are appropriately managed. While asbestos is already a listed Hazardous Material under the MCP, management of wastes containing asbestos is regulated by the Massachusetts Air Quality Regulations [310 CMR 7.15 (e)] and Solid Waste Management Regulations (310 CMR 19.061), and by the National Emission Standards for Hazardous Air Pollutants (40 CFR 150 et. seq).

Therefore, in 2004, MassDEP proposed to add a new paragraph to 310 CMR 40.0032 ("Contaminated Media and Contaminated Debris" to direct people who are conducting response actions to the appropriate requirements for handling asbestos-contaminated soil. In addition, an amendment of the "anti-degradation" provisions of the MCP in 310 CMR 40.032(3) was also proposed in 2004 to clarify that management of asbestos fibers in soil that would be exempt from both MCP and BWP asbestos program notifications would remain subject to the MCP's "anti-degradation" provisions. The amendments have been revised to be consistent with the new terms proposed for the MCP, and are reprinted here for context.

40.0032 Contaminated Media and Contaminated Debris

…

(3) Soils containing oil or waste oil at concentrations less than a release notification threshold specified in 310 CMR 40.0300 and 40.1600, and that are not otherwise a hazardous waste, and soils that contain one or more hazardous materials at concentrations less than a release notification threshold, and that are not a hazardous waste, and soils containing unconsolidated asbestos fibers that are exempt from notification as specified in 310 CMR 40.0317, may be transported from a disposal site without notice to or approval from the Department under the provisions of this Contingency Plan, provided that such soil:
   (a) Is not disposed or reused at locations where the concentrations of oil or hazardous materials in the soil would be in excess of a release notification threshold applicable at the receiving site, as delineated in 310 CMR 40.0300 and 40.1600; and
   (b) Is not disposed or reused at locations where existing concentrations of oil and/or hazardous material at the receiving site are significantly lower than the levels of those oil and/or hazardous materials present in the soil being disposed or reused.

(4) Soil contaminated solely with **Debris Containing Asbestos in Friable Material and Debris Containing Asbestos Sources** and soil contaminated with such Debris and oil and/or hazardous materials that are not categorized as hazardous waste pursuant to 310 CMR 30.000, and that is associated with response actions conducted pursuant to 310 CMR 40.0000 and/or with abatement work conducted pursuant to 310 CMR 7.15, shall be managed in accordance with:
   (a) The work practices and disposal requirements described in 310 CMR 7.15(e);
   (b) The use of a Bill of Lading to accompany off-site shipments for disposal described in 40 CFR 61.150(d); and
   (c) Disposal in an appropriate facility in accordance with 310 CMR 19.061.

(5) Soil contaminated with **Debris Containing Asbestos in Friable Mate**rial and one or more hazardous wastes shall be managed in accordance with the provisions of 310 CMR 30.000, and shall use a Hazardous Waste Manifest to accompany off-site shipments for disposal.

6. **General Provisions for Response Action Outcomes**

…

(5) A Class A or Class B Response Action Outcome shall not be achieved unless and until each source of oil and/or hazardous material which is resulting or is likely to result in an increase in concentrations of oil and/or hazardous material in an environmental medium, either as a consequence of a direct discharge or through intermedia transfer of oil and/or hazardous material, is eliminated or controlled.

(a) Such sources may include, without limitation:

1. leaking storage tanks, vessels, drums and other containers;
2. dry wells or wastewater disposal systems which are not in compliance with regulations governing discharges from those systems
3. contaminated fill, soil, sediment and waste deposits; and
4. non-aqueous phase liquids.

(b) [new language] For the purposes of 310 CMR 40.1003(5), the presence of Debris Containing Asbestos in Friable Material in accessible soil pursuant to 310 CMR 40.0933(4)(c) is defined to be a source to ambient air.

(c) For the purposes of 310 CMR 40.1003(5), the downgradient leading edge of a plume of oil and/or hazardous material dissolved in and migrating with groundwater shall not, in and of itself, be considered a source of oil and/or hazardous material.

3.2 Proposed Revisions to the Air Quality Regulations

Note: Proposed new language is in **bold.**

7.15: U Asbestos

(1) Standards for Demolition/Renovation
(a) Applicability. No person shall cause, suffer, allow, or permit the demolition/renovation, installation, reinstallation, handling, transporting, storage, or disposal of a facility or facility component that contains asbestos, asbestos-containing material, or asbestos-containing waste material in a manner which causes or contributes to a condition of air pollution.
(b) Notification. Each owner/operator of a demolition/renovation operation involving asbestos-containing material shall:

1. Provide the Department with all information required on a Department-approved form with respect to the intended demolition/ renovation operation of a facility or facility component. A waiver to the notification provisions contained in 310 CMR 7.15(1)(b)2.a. and b., may be granted by the Department in the case of an emergency.
2. Postmark or deliver all required information to the applicable Department regional office:
    a. at least ten working days before a demolition/renovation operation begins, or
    b. within one working day prior to the beginning of an emergency demolition/renovation operation unless a waiver is granted by the Department, or if less than one working day, notification shall be made initially by telephone with written follow-up, or
    c. where an owner/operator receives written Department approval of a planned demolition/renovation operation occurring during a 12 month period, provide revised information as required by the Department in writing, and a monthly report of updated information for actual work performed.
3. Include but not be limited to the following information on the Department-approved form:
    a. Name, address, and telephone number of the facility owner, operation manager, if any, contractor, and subcontractor, if any, contractor's or subcontractor's Massachusetts asbestos removal certification and licensing number, if any;
    b. Description of the facility being demolished and renovated, including the address, worksite location or locations as described in 7.15(1)(b)2.c., size, age, and prior and current use of the facility;
    c. Estimate (in linear feet or square feet) of the approximate amount of asbestos-containing materials to be handled under this application with a description of the techniques used for the estimation;
    d. Scheduled start-up and completion dates of the demolition/renovation operation, transportation, storage at a refuse transfer station facility (if applicable), and disposal at a sanitary landfill site of the asbestos-containing waste material; if the demolition/renovation start-up or completion date changes or is cancelled ensure that notification is made in writing at least one working day prior to the originally-scheduled start date of the operation;
    e. Description of proposed demolition/renovation operation and procedures to be used;
    f. Name, address, and telephone number of the transporter company(s) responsible for transporting asbestos-containing waste material from the demolition/renovation site to storage site, if any, and to final disposal site;
    g. Name, address, and telephone number of the refuse transfer station facility and owner responsible for storing the asbestos-containing waste material prior to final transport and disposal at a sanitary landfill site;

h. Name, address, and telephone number of the sanitary landfill facility and owner where the asbestos-containing waste material will be disposed;

i. For a facility described as an emergency demolition/renovation operation, the name, title, and authority of the state or local government official who evaluated the emergency and ordered the operation;

j. Date and signature of the facility owner/operator or facility owner's designee and date and signature of the contractor.

4. Separate notification will be required, except as to 310 CMR 7.15(1)(b)2.c., when:

a. demolition/renovations are scheduled for widely-spaced geographical locations on the same facility;

b. demolition/renovations are scheduled for a single facility, but are separated by a time period of greater than one week; or

c. when a demolition/renovation is postponed more than 30 days from the date on the initial notification.

5. Notwithstanding the requirements of 310 CMR 7.15 (b) (1-4), management of asbestos-containing material in soil at a disposal site for which response actions are being conducted pursuant to MGL c. 21E and 310 CMR 40.0000 (the Massachusetts Contingency Plan) does not require notification pursuant to this section, except that, when the response action is a "Limited Removal Action" conducted pursuant to 310 CMR 40.0318, notification to the Department is required pursuant to 310 CMR 7.15.

6. Notwithstanding the requirements of 310 CMR 7.15 (b) (1-4), management of unconsolidated asbestos fibers in soil in the absence of material that is the source of such fibers does not require notification pursuant to 310 CMR 7.15.

7. Management of unconsolidated asbestos fibers in soil in the absence of material that is the source of the fibers does not require notification pursuant to 310 CMR 7.15.

(c) Procedures for Asbestos Emission Control. Each owner/operator shall comply with the following procedures to prevent visible or particulate emissions to the ambient air space:

1. Remove any asbestos-containing material from a facility or facility component prior to demolition/renovation operations if such operations will cause asbestos emissions, or will render the asbestos-containing material friable, or will prevent access to the asbestos-containing material for subsequent containment and removal;

2. When a facility component covered or coated with asbestos-containing material is being removed in units or as sections:

a. Adequately wet asbestos-containing material exposed during the removal operations;

b. Lower the units or sections to the ground level so as to not cause airborne emissions of asbestos; and

c. Ensure no release of asbestos to the ambient air space during removal of asbestos from these units or sections handled so as to ensure:

i. maintaining adequate wetness of the asbestos-containing material, and

ii. sealing the work area and using a local exhaust ventilation and collection system designed and operated to capture particulate asbestos material. This system must exhibit no visible or particulate emissions to the outside air and be designed and operated in accordance with the requirements of 7.15(1)(d), Air Cleaning;

3. When asbestos-containing material is being removed from a facility component the following procedures shall be performed:

a. Ensure that such material is adequately wet;

b. Contain the material *in situ* of the facility component;

c. Lower the contained material carefully to the ground so as to prevent emissions;

d. Ensure no release of asbestos emissions by methods of capture and containment of fugitive dust such as work area seal and air cleaning, as described in 310 CMR 7.15.

4. Once the asbestos-containing material have been removed and wetted, ensure that the material remains wet until and after it is sealed into a container for disposal.

(d) Air Cleaning. The owner/operator using air cleaning at a facility shall properly install, use, operate, and maintain all air-cleaning equipment authorized by 310 CMR 7.15(1)(d). Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos-containing material. Each owner/operator shall use one of the following air cleaning systems or their equal:

1. Use fabric filter collection devices and perform the following:

a. operate the fabric filter collection devices at a pressure drop of no more than four inches water gauge, as measured across the filter fabric;

b. ensure that the air flow permeability, as determined by ASTM Method D737-75, does not exceed 350 ft 3/min/ft2 for felted fabrics;

c. ensure that felted fabric weighs at least 14 ounces per square yard and is at least 1/16 inch thick throughout; and

d. avoid the use of synthetic fabrics that contain fill yarn other than that which is spun; or

2. Use portable, high efficiency particulate air (HEPA) filtered power exhaust units equipped with negative air pressure systems with operational alarm system capable of indicating the unit is working properly, and utilizing a clean filter specified for the unit and capable of filtering 0.3 micron particles with 99.97% efficiency; or

3. In the event that the use of an air cleaning system causes a fire or explosion hazard, the Department may authorize as a substitute

a. the use of wet collectors designed to operate with a unit contracting energy of at least 40 inches water gauge pressure; or

b. the use of filtering equipment other than that described in 310 CMR 7.15, if the owner/operator demonstrates to the Department's satisfaction that it is as efficient in filtering particulate asbestos material.

(e) Waste Disposal. Each owner/operator shall:

1. Discharge no visible or particulate emissions to the ambient air during the collection, processing, packaging, transporting, transferring, or disposing of any asbestos-containing waste material, and use the disposal methods specified in 310 CMR 7.15(1)(e) such that the asbestos-containing material is non-friable;

a. adequately wet asbestos-containing waste material obtained from air cleaning equipment or from removal operations and, while wet, containerize and seal the asbestos-containing waste material in leak-tight containers, labeled

CAUTION
Contains Asbestos
Avoid Opening or
Breaking Container
Breathing Asbestos is Hazardous
to your Health

or, use warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA), or

b. process asbestos-containing waste material into non-friable form such as pellets or other shapes; or

c. use an alternative processing method that has received prior approval by the Department.

2. Store at a refuse transfer station facility permitted to manage asbestos waste in accordance with 310 CMR 19.061: *Special Waste*.
3. Dispose of asbestos-containing waste material at an approved sanitary landfill special waste site. If within Massachusetts, such sites must be operated in accordance with 310 CMR 19.000. Outside Massachusetts, such sites must be operated in accordance with applicable state and federal asbestos laws.

(f) Spraying. No owner/operator of a facility shall spray on any facility or facility component any asbestos-containing material.
(g) Insulating Material. No owner/operator of a facility may install or reinstall on a facility or facility component asbestos-containing insulating materia1.

(2) Enforcement Provisions. 310 CMR 7.15 is subject to the enforcement provisions in 310 CMR 7.52, except as to 310 CMR 7.15(1)(b).

3.3 Proposed Amendments to the Solid Waste Regulations to Address Asbestos in Soil

NOTE: **Bold** sections are the proposed changes to address asbestos in soil.

19.006: Definitions:

Asbestos in Soil means soil containing unconsolidated fibers of asbestos and/or soil containing Debris Containing Asbestos Source Material (as defined in 310 CMR 40.0000) at a concentration that is less than the Reportable Concentration established in the Massachusetts Contingency Plan (i.e., 310 CMR 40.0315).

19.061: Special Waste

(1) General . No solid waste management facility shall receive, store, process, treat or dispose of a special waste unless said solid waste management facility:

(a) is operated and maintained in compliance with a valid site assignment, plan approval or permit and any authorizations issued by the Department;
(b) has received written approval from the Department to handle the specific special waste pursuant to 310 CMR 19.061(5) and operates in compliance with the conditions of the approval, if required herein; and
(c) manages the waste in accordance with the requirements of 310 CMR 19.061(6).

(2) Classification of Special Wastes . A solid waste is classified as a special waste if:

(a) the waste is a special waste listed in 310 CMR 19.061(3); or
(b) the waste will require special management to ensure protection of public health, safety or the environment based upon the physical, biological, or chemical properties of the waste.

(3) Listed Special Wastes . Solid wastes that the Department has classified as listed special wastes include:

(a) asbestos waste;
(b) infectious wastes, except as specified in 310 CMR 19.061(6)(c)4.;
(c) sludges, including but not limited to wastewater treatment sludges, drinking water treatment sludges and industrial process wastewater treatment sludges.

(4) Application to Manage Special Wastes .

(a) General .
1. Solid waste management facilities shall use the application procedures described in 310 CMR 19.061(4), to apply to the Department for approval to manage a special waste.
2. The application shall include such information, data and descriptions as required by the Department to fully assess the nature of the special waste, its handling requirements and the capability of the facility to properly manage the waste.

(b) Filing . An application for approval to manage a special waste shall be filed with the Department. At the time of application to the Department, a copy of the application shall be filed with the board of health in whose jurisdiction the facility is located.

(c) Application for Special Wastes Other Than Asbestos and Infectious Wastes . Except for asbestos waste and infectious waste as specified in 310 CMR 19.061(4)(d), applications to manage special wastes shall include the information specified in 310 CMR 19.061(4)(c). Data submitted on the physical, chemical or biological properties of the waste shall be generated from analyses of representative samples of the waste for each source of the waste. The application shall include:

identification of the solid waste management facility;

2. identification of the generator(s) of the waste and the specific source or sources of the waste;

3. a general description of the nature of the waste;

4. a description of the industrial or other process which generates the waste;

5. the quantity of the waste to be disposed and frequency of disposal (volume and/or tonnage per month or year);

6. a detailed description of the physical properties of the waste including, but not limited to size, density and percent solids;

7. a detailed description of the chemical properties of the waste including, but not limited to ph, reactivity, leachability and total metals;

8. a demonstration that the waste is not a hazardous waste pursuant to 310 CMR 30.000;

9. the biological properties of the waste, if applicable, including, but not limited to pathogens;

10. identification of special waste handling procedures to be employed by the facility to ensure proper management of the special waste; and

11. other information about the waste or the solid waste management facility as required by the Department in order to classify the waste or to determine the ability of the facility to handle the material.

(d) Applications for Asbestos Wastes and Infectious Wastes . Applications to manage asbestos wastes or infectious wastes shall include:

1. identification of the solid waste management facility;

2. the quantity of the waste to be handled or disposed (volume and/or tonnage per month or year);

3. identification of special waste handling procedures to be employed by the facility to ensure proper management of the special waste; and

4. other information about the waste as required by the Department in order to determine the ability of the facility to handle the special waste.

(5) Department Approval to Manage Special Wastes .

(a) Classifications . When the waste is not a listed special waste, the Department shall determine whether the waste is classified as a special waste. The Department's determination shall be based upon the quantity of waste, the physical, biological and chemical properties of the waste and whether the waste will require special management to ensure protection of public health, safety or the environment.

(b) Decision . The Department shall determine whether a facility shall receive approval to manage the special waste identified in the application. The Department shall base its decision on whether the facility can safely manage the special waste.

(c) Issuance of a Decision . The Department shall issue a written decision for all wastes for which it receives a request conforming with the requirements set forth in 310 CMR 19.061(4).

(d) Conditions . The Department may issue an approval to manage a special waste subject to any conditions the Department deems necessary to protect public health, safety or the environment. The approval may also contain a condition prohibiting the applicant from accepting the special waste for a period of not less than 14 days, to allow the Department to review comments from the board of health submitted pursuant to 310 CMR 19.061(5)(f), unless the Department determines that an adverse impact would

result from a delay in disposal.

(e) Permit Modification . If the Department determines that the handling of a waste at a facility shall cause a deviation from the approved plan or permit, the operator shall submit an application for permit modification in accordance with 310 CMR 19.039.

(f) Board of Health Notification and Comment Period .

1. The board of health shall be notified of the Department's decision on an application to manage a special waste.
2. Within 14 days of receiving such notification the board of health may request the Department to rescind or modify an approval to manage a special waste where the board of health deems that the handling of the special waste would have an adverse impact.

(g) Modification or Recision . The Department shall modify or rescind, as appropriate, an approval to accept special waste if the board of health demonstrates to the satisfaction of the Department, in the request filed in accordance with 310 CMR 19.061(5)(f), that the acceptance of the special waste under the conditions which may have been imposed by the Department is likely to result in an adverse impact.

(6) Management Requirements for Special Wastes .

(a) General Requirements . The following conditions shall apply to any solid waste management facilities handling special wastes:

1. the operator shall keep a copy of the approval to manage a special waste on file at the facility and make available said approval letter upon request by Departmental representatives; and
2. the operator shall instruct and train employees in proper handling procedures for any special waste approved to be managed by the facility.

(b) Requirements for Handling Asbestos Wastes . In addition to the requirements at 310 CMR 19.061(6)(a), all asbestos waste, except as specified in 310 CMR 19.061(6)(b)3., shall be managed in accordance with 310 CMR 19.061(6)(b)1. and 2.

1. All facilities shall observe the following requirements for handling asbestos waste:
    a. Asbestos waste shall not be accepted for disposal at solid waste combustion facilities.
    b. Asbestos waste that has not been properly wetted, containerized and labeled according to 310 CMR 7.15 shall not be accepted at any solid waste management facility.
    c. Asbestos waste that has been properly wetted, containerized and labeled in accordance with 310 CMR 7.15 shall not be accepted at any solid waste facility unless that facility has received approval from the Department in accordance with 310 CMR 19.061 to accept asbestos waste.
    d. Asbestos waste that has been properly wetted, containerized and labeled shall be managed so as to maintain the integrity of its containers and to prevent emissions of asbestos fibers to the ambient air.
2. Landfill Specific Requirements . In addition to the requirements in 310 CMR 19.061(6)(b)1., landfills that have received approval from the Department to accept asbestos waste shall observe the following operational requirements:
    a. Asbestos waste shall be immediately disposed in the landfill and shall not be stored at the landfill prior to placement in the landfill.
    b. Asbestos waste shall be placed in the landfill in such manner as to prevent the release of asbestos fibers to the air during placement.
    c. Asbestos waste shall be placed in the landfill using a method approved by the Department. The approved method shall be as described in 310 CMR 19.100 through 19.204 in Department guidance or in a Department approval or permit. All such approved placement methods shall include requirements that the asbestos waste is covered by sufficient amounts of either solid waste

that does not contain asbestos and/or daily cover material to assure that no asbestos fibers are released to the air during or subsequent to compaction.

d. Accurate records of the surveyed location in the landfill of all asbestos waste shall be maintained. Locations of asbestos deposition shall be noted in the Record Notice of Landfill Operation pursuant to 310 CMR 19.100 through 19.204. Locations of asbestos deposition shall also be included whenever information regarding the property is recorded on the property deed pursuant to M.G.L. c. 111, § 150A.

e. Areas of the landfill containing asbestos shall be clearly marked by the operator.

f. Areas of the landfill containing asbestos waste shall not be excavated.

3. Requirements for certain classes of asbestos wastes . The following asbestos wastes are not subject to the provisions of 310 CMR 19.061 except as specified at 310 CMR 19.061(6)(b)1.a.:

a. intact and unbroken vinyl asbestos tile (VAT);

b. asphaltic asbestos-containing siding products and asphaltic asbestos-containing materials such as roofing felts~~,~~ and roofing shingles (Note: This does not include other asbestos containing roofing shingles and siding products such as those containing a cementitious binding characterized as being hard and brittle.); and

c. Asbestos in Soil as defined at 310 CMR 19.006; and

d. other asbestos waste so designated by the Department in writing.

(c) Requirements for Handling Infectious Waste . In addition to the requirements at 310 CMR 19.061(6)(a), infectious waste shall be handled in accordance with the following:

1. In addition to the requirements of 310 CMR 19.000, infectious waste shall be treated, packaged, labeled and disposed of in accordance with 105 CMR 480.000.

2. Landfills . Infectious waste shall not be disposed in a solid waste landfill unless the waste is processed and managed to meet the requirements of 310 CMR 19.061(6)(c)4.

3. Facilities other than landfills . Infectious waste (which has not been rendered non-infectious) shall not be accepted at a solid waste management facility unless that facility has received approval under 310 CMR 19.061 to manage infectious waste.

4. Infectious waste that has been rendered non-infectious in accordance with 105 CMR 480.000 and is packaged, labeled and otherwise managed in accordance with 105 CMR 480.000 is not subject to 310 CMR 19.061 and may be accepted at any solid waste facility.

(d) Requirements for Handling Sludges . In addition to the requirements at 310 CMR 19.061(6)(a), sludges shall be handled in accordance with the following:

1. General Requirements . Disposal of all types of sludges shall comply with the following requirements.

a. Sludges accepted at a solid waste facility shall not contain free draining liquids.

b. Sludges disposed at landfills shall contain a minimum of 20% solids.

c. Odor control methods, acceptable to the Department, shall be employed at all landfills accepting odor-producing sludges.

2. Requirements for Sewage Treatment and Water Treatment Sludges . In addition to the requirements set forth at 310 CMR 19.061(6)(d)1., sewage treatment and water treatment sludges shall comply with the following requirements.

a. Sewage treatment and water treatment sludges shall be incorporated into the active face of a landfill in a 3:1 mixture of solid waste to sludge or placed in a designated area and covered immediately.

b. Sewage treatment sludges may be accepted at a solid waste landfill only after land application and composting options have been investigated by the applicant or by the generator of such sludge and determined by the

Department not to be feasible, provided that said investigation of options may be deferred for a reasonable time upon a determination by the Department that adverse impacts may occur as a result of delaying disposal of the sludge.

c. Sewage treatment sludges containing pathogens that have not been stabilized using methods approved by the Department shall not be disposed at an unlined landfill, unless specifically approved by the Department on a temporary basis.

3. Requirements for Industrial Wastewater Treatment Sludges . In addition to the requirements set forth at 310 CMR 19.061(6)(d)1., industrial wastewater treatment sludges shall comply with the following requirements.

The solid waste management facility operator shall provide data, descriptions and other information required at 310 CMR 19.061(4) to the Department for each separate source of industrial wastewater treatment sludge prior to acceptance at the landfill.

(7) Reclassification . The Department may reclassify a waste in accordance with 310 CMR 19.061(5) or place further conditions on an approval to manage a special waste in accordance with 310 CMR 19.061 should such action be deemed necessary. Any such reclassification or conditions shall be in writing.

3.4. Proposed Amendment of MassDEP Policy # COMM 97-001, "Reuse and Disposal of Contaminated Soil at Massachusetts Landfills"

Note: This section contains the sections of Policy # COMM 97-001 that would be revised to include asbestos in soil. A complete version of this Policy is available at http://www.mass.gov/dep/cleanup/laws/finalpol.htm.

Terminology

This section contains definitions of the important terms and acronyms used in this Policy.

…

Debris Containing Asbestos Source Material means Debris, as defined in 310 CMR 40.0006, which includes any material that is less than 3 inches in diameter and contains 1 percent or more asbestos by area.

Contaminant Levels, and Approval Procedures for the Reuse and Disposal of Contaminated Soil at Massachusetts Landfills

4.1 Contaminant Levels for Reuse

Table 1

CONTAMINANT	Reuse Levels (mg/kg)[a]	
	Lined Landfills	Unlined Landfill
Total Arsenic	40	40
Total Cadmium	80	30
Total Chromium	1,000	1,000
Total Debris Containing Asbestos Source Material[g]	1,000[h] 8,000[i]	1,000[h] 8,000[i]
Total Lead	2,000	1,000
Total Mercury	10	10
Total Petroleum Hydrocarbons (TPH)	5,000	2,500
Total PCBs[b]	< 2	< 2
Total SVOCs[c]	100	100
Total VOCs[d]	10	4
Conductivity[e] (umhos/cm)	8,000 umhos/cm	4,000 umhos/cm
Listed or Characteristic Hazardous Waste (TCLP)[f]	NONE	NONE

TABLE 1 NOTES:

a **The reuse levels are expressed as total levels in mg/kg and apply to reuse of soil as daily cover, intermediate cover, and pre-capping contour material at lined landfills and unlined landfills as described in this Policy.**

b **Total concentrations of polychlorinated biphenyls EPA Method 8080.**

c **Total concentrations of compounds listed in EPA Method 8270.**

d **Total concentration of compounds listed in EPA Method 8260.**

e **For soil which may be expected to contain elevated NaCl.**

f **TCLP testing shall be performed for metals or organic compounds when the total concentrations in the soil are above the theoretical levels at which the TCLP criteria may be exceeded. For guidance parties shall consult United States Environmental Protection Agency, Memorandum #36, "Notes on RCRA Methods and QA Activities", pp. 19-21, Gail Hanson, January 12, 1993.**

g **Total Debris Containing Asbestos Source Material as measured using the MassDEP Sieve Method for Asbestos**

h **Concentration limit for reuse of soil contaminated with Debris Containing Asbestos Source Material as alternative daily or intermediate cover.**

i **Concentration limit for reuse of soil contaminated with Debris Containing Asbestos Source Material as pre-capping contour material (e.g., grading and shaping material).**

[Please note that the methods specified in footnotes d, e, and f indicate the universe of chemicals to be added up in calculating the total concentrations for these classes of contaminants. Section 5.0 of this Policy provides guidance for determining which specific chemicals must be considered chemicals of concern (e.g., contaminants) within the soil. This Policy does not specify the analytical test methods to be used to quantify the specific contaminants. Readers can consult 310 CMR 40.0017 Environmental Sample Collection and Analysis, 310 CMR 30.110 Criteria, Procedures for Determining Which Wastes are to be Regulated as Hazardous Waste or Non-Hazardous Waste and 310 CMR 30.151 Representative Sampling Methods for additional information which may be applicable to the selection of appropriate sampling and analytical methods.]

3.5. Draft Guidance: Best Management Practices for Bulk Loading of ACM Soil/Debris

*Note: in response to comments received on the 2004 proposal, this Guidance has been revised (see **bold** text below) to allow alternative container and truck liners that will prevent asbestos-contaminated soil from escaping during transport. Additionally, Some commenters indicated that the proposed requirement for conducting mechanical soil screening only in an enclosure under negative pressure was too onerous. Since the close of the public comment period, MassDEP has observed the operation of a mechanical device that screens large volumes of soil while wet (courtesy of the Massachusetts Department of Capital Asset Management, during a site preparation project at the Boston State Hospital site in Mattapan). While this equipment appears to be able to screen out large solid objects with less dust than would be generated by a dry screening operation, it also appeared to crush material that could contain asbestos, rendering it friable (if it was not friable to start with) and contaminating the resulting soil. Therefore, MassDEP continues to recommend that mechanical screening of soil containing asbestos only occur in an enclosure and under negative pressure. The Department will continue to monitor the development of new screening devices and may revisit this decision at a later time.*

1. Conduct perimeter air sampling on all four sides of the work area during all active handling operations (unless containment is used):
    a. Use phase contrast microscopy (PCM) to analyze a minimum of 8 air monitoring samples per 8-hour shift, and perform PCM analysis on-site to obtain real-time data (maintain data on-site). On 10% of samples, use transmission electron microscopy (TEM) to verify PCM results.
    b. Stop work and notify BWP if fiber levels exceed 0.01 fibers/cc.
    c. If containment is used for handling, collect and analyze clearance air monitoring samples prior to breaking down or moving containment.
    d. Employ a DOS certified Asbestos Project Monitor to perform air monitoring.

2. Loading Operations
    a. Keep ACM soils wet during excavation, handling and loading so that no dust is generated.
    b. If mechanical screening of ACM soil to remove debris will be performed, conduct screening in a negative-pressure contained work area using air cleaning.
    c. Clearly delineate (e.g., identify and mark) routes from loading area to equipment decontamination area to avoid contamination spread.
    d. Load soil from excavation directly into trucks or containers and avoid stockpiling of soil (i.e., to limit number of times soil is handled).
    e. Prevent visible emissions during all operations.
    f. To the extent feasible, use loading machinery that creates the least amount of soil disturbance (e.g., an excavator is preferable to a vacuum loader) and facilitates decontamination (e.g., tire vehicles are preferable to tracked vehicles).
    g. If a vacuum loader is used, the material outlet / loading operations must be conducted under negative-pressure containment.

3. Packaging
    a. Line each container or truck with a 6-millimeter thick polyethylene truck body liner. Polyethylene liners should be designed and sized for the container to be used and should be extended along the inside of the truck or container-bed gate to protect against contamination during loading and to facilitate decontamination. After loading, the liner should be sealed.
    b. Cover each truck with high-density tie-down tarps instead of pull-back covers.

c. For containers of asbestos containing waste, place labels noting “asbestos danger” and generator on top of sealed liner; place DOT asbestos placard (2212) on all four vertical sides of the container or vehicle being used.

4. Decontamination
    a. Use 3-stage personnel decontamination as appropriate.
    b. Establish an equipment decontamination area and ensure that the decontamination pad for equipment is constructed to withstand use weight of equipment, frequency of use, length of the job, etc. (e.g., multi-layer, with materials such as stone, EPDM-rubber roofing, hay bales, filters and pumps).
    c. Prior to disposal, collect and filter all water used in the decontamination process using a 5-micron filter and dispose of the filter as asbestos waste. Pre-filtration screening or pre-treatment should be implemented as needed to keep the 5-micron filter from clogging. Decontamination water that has been filtered with a 5-micron screen should be reused where possible. Disposal should be done in accordance with management plans for other wastewater generated by construction activities at the location.
    d. Clean the decontamination area as needed, at a minimum at the end of every shift.
    e. Waste resulting from the breakdown of personnel and equipment decontamination should be handled as asbestos containing waste material and should be packaged and disposed of accordingly.

5. Personal protective equipment
    a. Follow 453 CMR 6.00 Worker Protection Requirements and OHSA standards at 29 CFR Part 1926.1101.

6. Training/certifications
    a. Follow 453 CMR 6.00 Training and Certification Requirements

4. Technical Support: MassDEP Sampling and Analysis Project for Soil Containing Asbestos

Purpose
Collect "r*eal world"* data to inform the development of the MassDEP regulations and policies on the assessment, cleanup, and reuse of soil containing asbestos debris commonly found in urban fill.

Background
The policy "Reuse and Disposal of Contaminated Soils at Massachusetts Landfills" (Comm-97-001, http://www.mass.gov/dep/bwp/dswm/files/97-001.htm) provides information to the regulated community about the MassDEP's requirements, standards, management practices and approvals for testing, tracking, transporting, and reusing or disposing of contaminated soil at Massachusetts landfills. The policy has been particularly successful in dealing with typical "urban fill" soil by establishing maximum contaminant levels for specific common substances (like lead and PAHs) in soil that can be re-used at landfills without a new site-specific approval.

In the fall of 2004, MassDEP proposed a set of regulations and policies that would coordinate and streamline the various regulations that address the assessment, cleanup and disposal of asbestos found in the environment, such as in urban fill material, consistent with the way the Department addresses other contaminants. DEP held public hearings on this proposal in the 2004, and since the end of the comment period has been working with an external workgroup to revise the proposal in response to comments received. Many of the comments raised questions about the appropriate analytical methods to use for notification and site assessment, methods for making decisions about "how clean is clean enough" based on risk assessments, and the available options for disposal or reuse of contaminated soil. The Workgroup strongly suggested that, before final regulations are promulgated and implemented, the Department should seek opportunities to gather "real world" data. MassDEP agreed to coordinate and review data from several pilot projects.

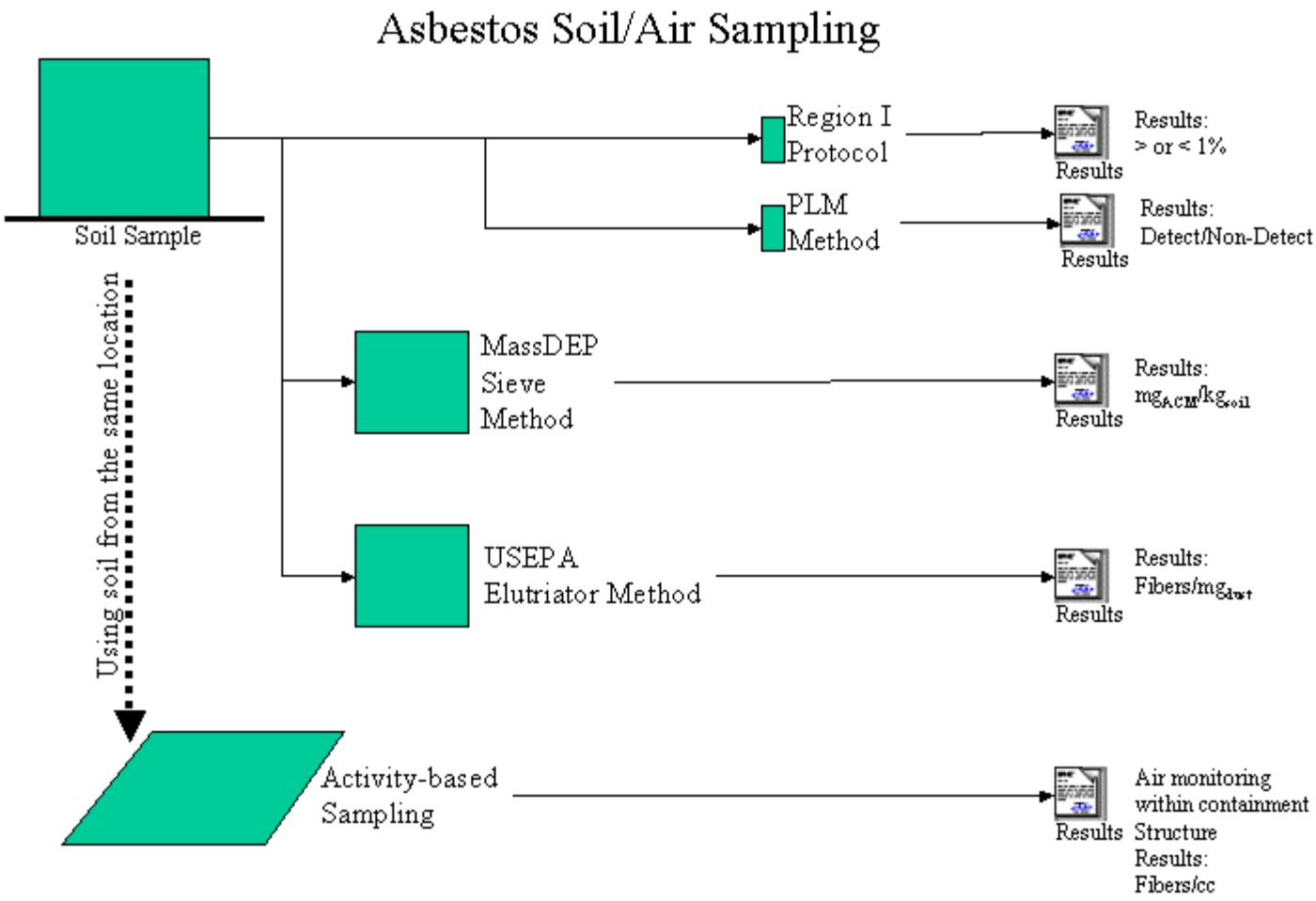
Sampling of Contaminated Soil from North Point Park and Other Locations
At North Point Park (located in Cambridge, "NPP") soil has been tested for a wide range of compounds consistent with the protocols established for the Central Artery/Third Harbor Tunnel ("CA/T") work, including asbestos and other contaminants commonly found in urban environments (e.g., lead and petroleum hydrocarbons) as well as pieces of building materials containing asbestos and unconsolidated asbestos fibers. A stockpile of material with low levels of contamination has been created. Material containing higher levels of contamination (including all identifiable pieces of asbestos-containing material) has been shipped to an off-site disposal facility. This work has been in progress for several years, and has been accompanied by air monitoring for asbestos fibers. To date, the monitoring has not indicated any significant releases of asbestos fibers into the air.

This pilot project presents a unique opportunity for the Department to collect an extensive data set about asbestos using a variety of sampling techniques, including those that simulate potential air emissions associated with aggressive use of the soil. This data set provides the basis for evaluating the potential asbestos content of airborne dust, and for correlating results from a variety of analytical methods.

The same approach is also being followed at CA/T stockpiles in East Boston and Subaru Pier to assess the variability of the analytical methods and results. In addition, MassDEP is contracting with multiple laboratories to evaluated the reproducibility of results.
Environmental Sampling and Analysis Plans:

- Soil: Representative soil samples are collected at and near the surface of the stockpile using hand tools. Analyze the soil samples for asbestos by four different methods: the standard bulk material PLM method, the standard US EPA Region I Protocol for asbestos in soil, a sieve method developed by DEP and the Workgroup, and the US EPA Elutriator Method which generates respirable dust within a controlled laboratory environment and measures the amounts of asbestos within the dust.

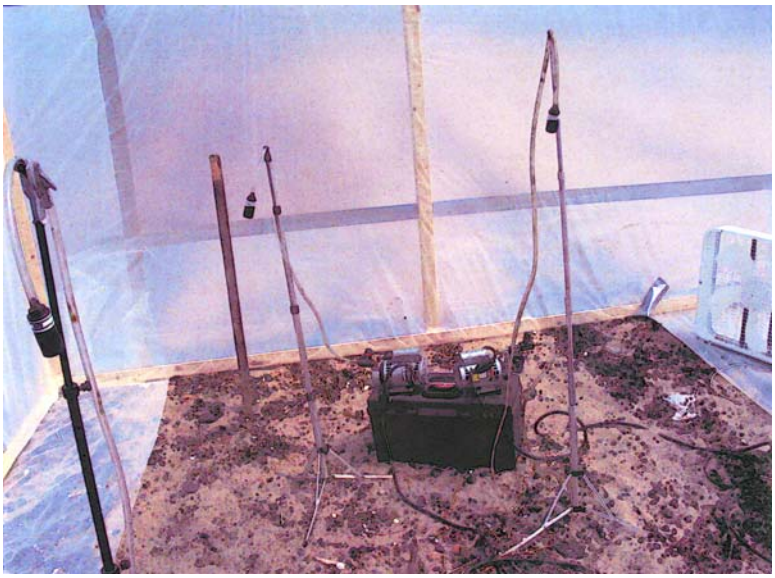
- Air: Simulate dust generation associated with aggressive soil disturbance in a controlled environment at the site. Soil from the stockpile is removed to an adjacent flat, stable location and temporary containments[9] erected over the soil. The soil is then disturbed using mechanical devises (e.g. shovels) and fans or leaf blowers to generate dust. The air is sampled for respirable dust (particulate matter less than 10 microns in diameter, or "PM_{10}") and for asbestos fibers by Phase Contrast Microscopy ("PCM") and Transmission Electron Microscopy ("TEM").



[9] The containment structures would be similar to those used for the Spectacle Island Asbestos Exposure Assessment (June, 2005) which measured 10'x12'x5' and were constructed of wood framing wrapped in polyethylene sheeting.

Containment Sampling
Example: Spectacle Island

Erecting the containment structure



Sampling equipment inside the containment

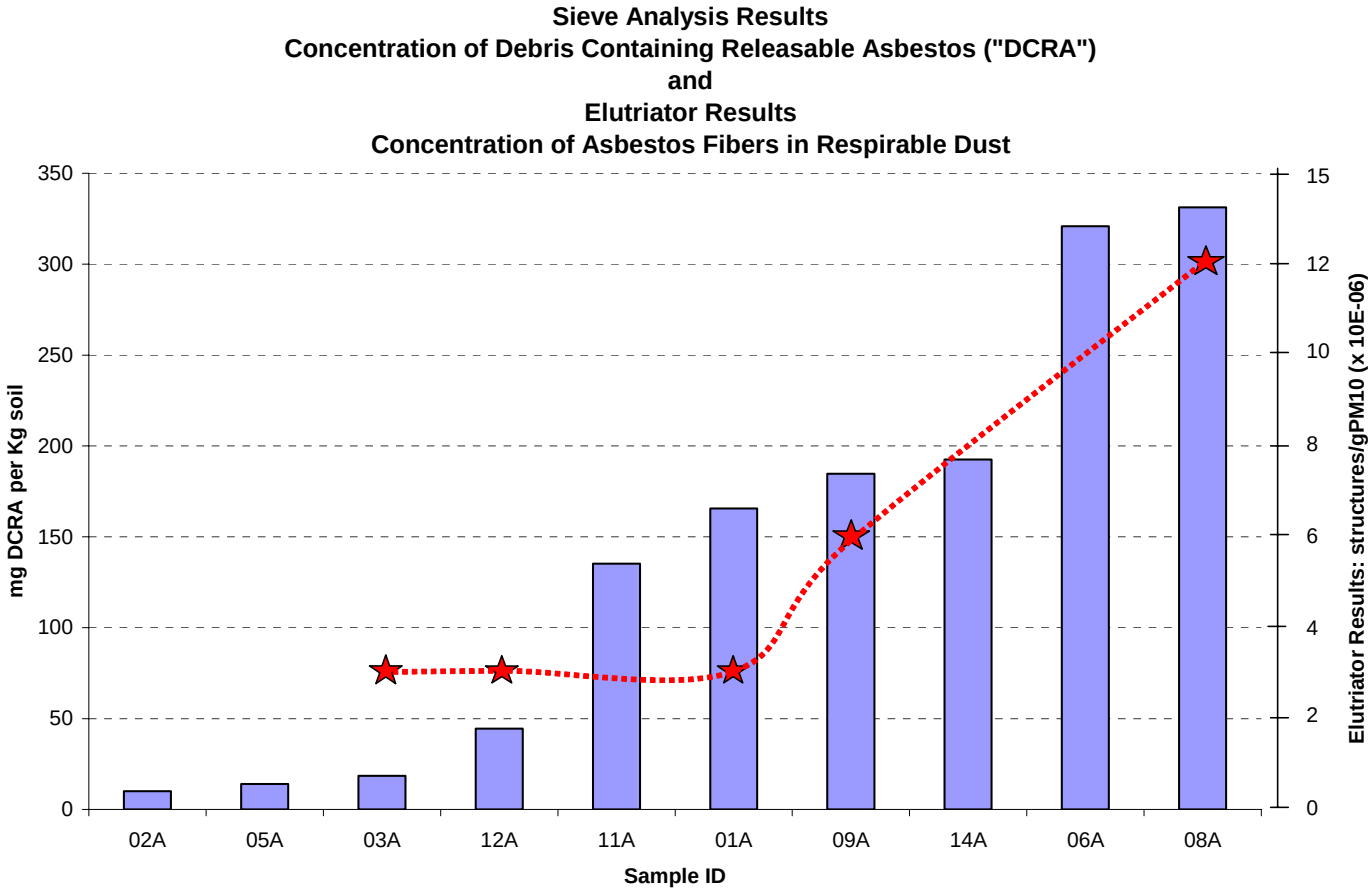
Results

MassDEP acknowledges that the results discussed below are preliminary and the Department continues to fund additional sampling of different stockpiles of soil contaminated with asbestos.

The decision to pursue the Sieve Method for the MCP notification triggers is based on the hypothesis that asbestos fibers – which, when inhaled, are the principle source of toxicity for asbestos exposure – are

released from Asbestos Containing Materials that have been broken, crumbled and pulverized. The more "source material", such as small "chunks", present at a site, the more likely it is that asbestos *fibers* have been released. The pieces of asbestos source material measured in the Sieve Method are used as quantifiable *surrogates* for the fibers.

Preliminary results from the North Point Park soil stockpile indicate that as the concentration of asbestos source material increases in the soil, the higher the measurement of fibers in the USEPA Superfund (Elutriator) Method. In the figure below, the bars indicate the concentration of asbestos source material and the stars indicate the concentration of fibers in airborne dust measured in the elutriator.



Based on this data, a conservative risk assessment for a residential exposure scenario indicates that 150 mg/kg of asbestos source material would be associated with a 1-in- one hundred thousand risk level. This is the "No Significant Risk" level for a site-specific risk assessment under the MCP.

The following table provides more detail on the preliminary results of each round of sampling of the North Point Park soil stockpile.

North Point Park Soil Results

	01A	02A	03A	04A	05A	06A	07A	08A	09A	10A	11A	12A	13A	14A	15A
PLM	Chrysotile	ND	ND	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile	ND	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile
Region I	<1% Chrysotile	<1% Chrysotile	<1% Chrysotile	ND	ND	<1% Chrysotile	<1% Chrysotile	<1% Chrysotile	ND	ND	<1% Chrysotile	ND	ND	ND	<1% Chrysotile
6.3 mm Sieve (mg/kg)	0	0	0		0		936.4	531.2	0		0	0		0	
4.75 Sieve (mg/kg)	0	0	19.2		0		0	859	2643.4		162.2	0		0	
2.00 Sieve (mg/kg)	1,404.60	86.5	152.3		102.2		935.6	1617.8	747.6		1182.3	430.4		1487.1	
Sieve: Total DCRA (mg/kg)	**165.5**	**10.1**	**18.5**		**14**		**320.8**	**331.2**	**184.7**		**135.2**	**44.5**		**192.5**	
Mass of PM10 (grams)	0.000111		0.000222					0.000129	0.000155			0.000197			
Total Structures Observed	1		1					4	2			1			
s/gPM10	**2.94E+06**		**2.95E+06**					**1.20E+07**	**5.62E+06**			**2.91E+06**			
Estimated Residential Risk	5.93E-06		5.96E-06					2.42E-05	1.14E-05			5.88E-06			
Activity															